as a "small business" under the Regulatory Flexibility Act. In the case of other small businesses, small organizations, and small governmental units which purchase light trucks, the standard will not affect the availability of fuel efficient light trucks or have a significant effect on the overall cost of purchasing and operating light trucks.

D. Impact of Federalism

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 12612, and it has been determined that the MY 1995 standard will not have sufficient Federalism implications to warrant the preparation of a Federalism Assessment.

E. Department of Energy Review

In accordance with section 502(i) of the Cost Savings Act, NHTSA submitted a pre-publication copy of the NPRM to the Department of Energy (DOE) for review. While NHTSA did not receive any comments from DOE before the NPRM was published, that Department did submit a comment one week after publication. DOE stated that it continues to view improvements in light truck fuel economy as critical to improving transportation efficiency and reducing oil consumption in the United States. It indicated that it had reviewed the NPRM and accompanying PRIA and was "concerned that the short lead time available to manufacturers considerably restricts their actions, especially for model years 1995 and 1996." DOE recommended that NHTSA proceed with the proposed ranges for the standards for MY 1995–96 but suggested that MY 1997 be handled in a separate rulemaking to be initiated as soon as possible in 1993.

In accordance with section 502(j) of the Cost Savings Act, NHTSA also submitted this final rule to DOE for review. That Department stated that it concurs with the establishment of 20.6 mpg as the light truck CAFE standard for MY 1995. It also recommended that the Department of Transportation initiate a new rulemaking that includes model years 1996 through 2000. DOE stated that by setting the CAFE standards in a timely fashion and including model years beyond those for which manufacturers had already completed their product plans, the Department of Transportation will have considerably greater scope in estimating "technological feasibility" and "economic practicability" in determining maximum feasible average fuel economy levels. DOE stated that through this approach, it believes the CAFE law can be used to achieve its maximum social benefit.

List of Subjects

49 CFR Part 523

Classification, Motor vehicles.

49 CFR Part 525, 533, and 537

Energy conservation, Motor vehicles.

In consideration of the foregoing, 49 CFR parts 523, 525, 533, and 537 are amended as follows:

PART 523—[AMENDED]

1. The authority citation for part 523 is revised to read as follows:

Authority: 15 U.S.C. 2002; 49 CFR 1.50.

2. Sections 523.5(b)(2) (iv) and (v) are revised to read as follows:

§ 523.5 Light truck.

* * * * *

(b) * * *

(2) * * *

(iv) Running clearance of not less than 20 centimeters.

(v) Front and rear axle clearances of not less than 18 centimeters each.

PART 525—[AMENDED]

1. The authority citation for part 525 is revised to read as follows:

Authority: 15 U.S.C. 2002; 49 CFR 1.50.

2. Section 525.7(e)(4) is revised to read as follows:

§ 525.7 Basis for petition.

* * * * *

(e) * * *

(4) Basic engine, displacement, and SAE rated net power, kilowatts;

* * * * *

PART 533—[AMENDED]

1. The authority citation for part 533 is revised to read as follows:

Authority: 15 U.S.C. 2002; 49 CFR 1.50.

3. Table III in § 533.5(a) is revised to read as follows:

§ 533.5 Requirements.

(a) * * *

Table III

Model Year	Combined standard	
	Captive imports	Other
1992	20.2	20.2
1993	20.4	20.4
1994	20.5	20.5
1995	20.6	20.6

* * * * *

2. Section 533.4(b)(2) is amended by revising the definition of *4-wheel drive, general utility vehicle* to read as follows:

§ 533.4 Definitions.

* * * * *

(b) * * *

(2) * * *

4-wheel drive, general utility vehicle means a 4-wheel drive, general purpose automobile capable of off-highway operation that has a wheelbase of not more than 280 centimeters, and that has a body shape similar to 1977 Jeep CJ–5 or CJ–7, or the 1977 Toyota Land Cruiser.

* * * * *

PART 537—[AMENDED]

1. The authority citation for part 537 is revised to read as follows:

Authority: 15 U.S.C. 2005; 49 CFR 1.50.

2. Sections 537.7(c)(4) (iii), and (iv) are revised to read as follows:

§ 537.7 Pre-model year and mid-model year reports.

* * * * *

(c) *Model type and configuration fuel economy and technical information.*

* * *

(4) * * *

(iii) Engine displacement, liters;

(iv) SAE net rated power, kilowatts;

* * * * *

Issued: April 1, 1993.

Howard M. Smolkin,

Executive Director.

[FR Doc. 93–8136 Filed 4–2–93; 2:39 pm]

BILLING CODE 4910–59–M

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN: 1018–AB42

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for Argyroxiphium Kauense (Ka'u Silversword)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The U.S. Fish and Wildlife Service (Service) determines a plant, *Argyroxiphium Kauense* (Ka'u Silversword), to be endangered pursuant to the Endangered Species Act of 1973, as amended (Act). This species is known only from 2 populations on the Island of Hawaii, totaling an estimated 540 individuals. The greatest threat to the survival of this species is the small

number of populations with its limited gene pool, depressed reproductive vigor, and population structure heavily skewed toward immature individuals. That is compounded by a requirement for cross-pollination and single flowering within the lifetime of an individual plant. Expansion of the populations beyond protective fencing is limited by predation and habitat degradation by feral animals. Because browsing differentially affects more mature plants and results in reduced seed viability, reproductive success in this species depends on continued protection of the populations against feral ungulates. With just two extant populations, the species also risks stochastic extinction from events such as lava flows and associated wildfires. This rule implements the protection and recovery provisions provided by the Act for this plant.

EFFECTIVE DATE: May 7, 1993.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the Pacific Islands Office, U.S. Fish and Wildlife Service, 300 Ala Moana Boulevard, room 6307, Honolulu, Hawaii 96813.

FOR FURTHER INFORMATION CONTACT: Robert P. Smith, Field Supervisor, at the above address (808/541–2749).

SUPPLEMENTARY INFORMATION:

Background

Argyroxiphium kauense was first collected above Kapapala on the south slope of Mauna Loa by Charles N. Forbes in 1911. That and another collection were both sterile and identified as *A. sandwicense* var. *macrocephalum* Gray by David D. Keck. After the first flowering and fruiting material were collected in 1956, *A. sandwicense* var. *kauense* was described by Joseph F. Rock and Marie C. Neal (1957), who named the plant after the Kau District, where it grows. Later that year, Otto and Isa Degener (1957) elevated the new variety to species rank.

All subsequent collections and confirmed sightings are from three areas: off Powerline Road in Upper Waiakea Forest Reserve (South Hilo District), at Ke a Pohina on Kahuku Ranch (Kau District), and in the general vicinity of Ainapo Trail in both Kapapala Forest Reserve (Kau District) and Kahuku Ranch. *Argyroxiphium kauense* is known to be extant at the first two of those three localities. The Ainapo population has not been seen since 1986, despite a search of the area in 1990 (William Paty, Hawaii Board of Land and Natural Resources, *in litt.*, 1990; Charles Wakida, Hawaii Division of Forestry and Wildlife (Hawaii DOFAW), *in litt.*, 1990; Steve Bergfeld, Hawaii DOFAW, pers. comm., 1992; Jack Lockwood, U.S. Geological Survey, pers. comm., 1990). The species occurs on State and privately owned land. Due to insufficient material, the identity of an historic collection from Hualalai cannot be confirmed; it could possibly be *A. kauense* (Carr 1985, 1990; Elizabeth Powell, University of Nevada, *in litt.*, 1990; E. Powell, pers. comm., 1990).

Argyroxiphium kauense is a rosette shrub, usually single-stemmed, its vegetative stems about 3 to 70 centimeters (cm) (1 to 24 inches (in)) long, and flowering stems about 0.7 to 2.5 meters (m) (2 to 8 feet (ft)) long. The leaves are very narrowly sword-shaped, 3- to 4-angled in cross section, about 20 to 40 cm (8 to 16 in) long and 0.5 cm (0.2 in) wide at the middle, nearly covered with dense, silky, silvery gray hairs. The flowering stalk as many branches, each with a flowering head of 3 to 11 ray flowers each about 1 cm (0.4 in) long, and 50 to 200 disk flowers each about 0.6 cm (0.2 in) long. The white or yellow to wine-red flowers bloom in August and September. The fruits are dry and black. *Argyroxiphium kauense* is distinguished from closely related species by its narrower leaves, hairs not completely covering the leaf surface, and fewer ray flowers per head (Carr 1985, 1990).

Argyroxiphium kauense grows primarily in moist forest openings or bogs at about 1,600 to 2,320 m (5,300 to 7,600 ft) elevation, although plants also occur on well-drained substrates in relatively dry sites (Carr 1990; Rick Warshauer, U.S. Fish and Wildlife Service, *in litt.*, 1979; J. Lockwood, pers. comm., 1990). The substrate is 'a'a or pahoehoe lava, sometimes with wet humus, on flat to steep and irregular ground (Degener *et al.* 1976, Meyrat 1982). The vegetation is most typically dry scrub or scrub forest dominated by *Metrosideros polymorpha* ('ohi'a) with such associates as *Styphelia tameiameiae* (pukiawe), *Coprosma ernodeoides* ('aiakanene), *Dodonaea viscosa* ('a'ali'i), *Geranium cuneatum* (nohoanu), and *Vaccinium reticulatum* ('ohelo) (Hawaii Heritage Program 1991; Donald Reeser, National Park Service, *in litt.*, 1974; R. Warshauer, *in litt.*, 1979). The open bog site shares those associates but is dominated by sedges (*Oreobolus furcatus, Rhynchospora chinensis* ssp. *spiciformis* (kuolohia), and *Carex montis-eeka*) (Clarke 1982).

The greatest threat to the survival of this species is the small number of populations with a limited gene pool, depressed reproductive vigor, and population structure heavily skewed toward immature individuals. That is compounded by a dependency on cross-pollination, and single flowering within the lifetime of an individual plant.

Expansion of the populations is limited by predation and habitat degradation by feral animals. Pigs (*Sus scrofa*) and goats (*Capra hircus*) were introduced to the island over a century ago. Mouflon sheep (*Ovis musimon*) and pigs have greatly reduced this species' numbers in the Ke a Pohina population over the past two decades. Outside protective fencing, feral pigs prevent seedling establishment, and pigs and mouflon sheep prevent the plants from reaching maturity (E. Powell, *in litt.*, 1985). Because browsing differentially affects more mature plants and results in reduced seed viability (E. Powell, pers, comm., 1992; pers. observation, 1991), the reproductive success of this species is dependent on continued protection of the population against feral ungulates. With just two extant populations, the species also risks stochastic extinction from events such as lava flows and associated wildfires (Kimura and Nagata 1980; Powell 1986; Linda Cuddihy, National Park Service, *in litt.*, 1990; E. Powell, pers, comm., 1990).

Federal action on this species began as a result of section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on plants considered to be endangered, threatened, or extinct in the United States. This report, designated as House Document No. 94–51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice in the **Federal Register** (40 FR 27823) of its acceptance of the Smithsonian report as a petition within the context of section 4(c)(2) (now section 4(b)(3)) of the Act, and giving notice of its intention to review the status of the plant taxa named therein. *Argyroxiphium kauense* was included in that notice as endangered. As a result of that review, on June 16, 1976, the Service published a proposed rule in the **Federal Register** (41 FR 24523) to determine endangered status pursuant to section 4 of the Act for approximately 1,700 vascular plant species. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94–51 and the July 1, 1975, **Federal Register** publication.

General comments received in response to the 1976 proposal are summarized in an April 26, 1978, **Federal Register** publication (43 FR

17909). In 1978, amendments to the Act required that all proposals over 2 years old be withdrawn. A 1-year grace period was given to proposals already over 2 years old. On December 10, 1979, the Service published a notice in the Federal Register (44 FR 70796) withdrawing that portion of the June 16, 1976, proposal that had not been made final, along with four other proposals that had expired. The Service published a notice of review for plants on December 15, 1980 (45 FR 82479), September 27, 1985 (50 FR 39525), and February 21, 1990 (55 FR 6183). In these notices, *Argyroxiphium kauense* was treated as a Category 1 candidate for Federal listing. Category 1 species are those for which the Service has on file substantial information on biological vulnerability and threats to support preparation of listing proposals.

Section 4(b)(3)(B) of the Act requires the Secretary to make findings on certain pending petitions within 12 months of their receipt. Section 2(b)(1) of the 1982 amendments further requires all petitions pending on October 13, 1982, be treated as having been newly submitted on that date. On October 13, 1983, the Service found that the petitioned listing of *Argyroxiphium kauense* was warranted, but precluded by other pending listing actions, in accordance with section 4(b)(3)(B)(iii) of the Act; notification of this finding was published on January 20, 1984 (49 FR 2485). Such a finding requires the petition to be recycled, pursuant to section 4(b)(3)(C)(i) of the Act. The finding was reviewed in October of 1984, 1985, 1986, 1987, 1988, and 1989.

On August 6, 1990, the Service published in the Federal Register (55 FR 31860) a proposal to list *Argyroxiphium kauense* as endangered. The proposal was based primarily on information supplied by Dr. Elizabeth Powell and observations by botanists and naturalists. The Service now determines *Argyroxiphium kauense* to be endangered with the publication of this rule.

Summary of Comments and Recommendations

In the August 6, 1990, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final listing decision. The public comment period ended on October 5, 1990. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice was published in The Hawaii Tribune-Herald on August 17, 1990, which invited general public comment.

Comments were received from three parties: one from a conservation organization that noted it had no information to add to the proposed rule; one from a private individual in support of listing the species, but offering no additional information; and one from a private party not favoring listing, commenting on the proposed rule, and correcting information presented in the proposed rule.

The latter respondent indicated that the Service overstated the threat of grazing by mouflon in the Ke a Pohina population, and suggested that a blight could be responsible for damage to leaf tips. This respondent also indicated that no browsing, grazing, or rooting by feral herbivores has occurred within the fenced area of the Ke a Pohina population. However, as described in Factor C under "Summary of Factors Affecting the Species," mouflon have damaged the *Argyroxiphium kauense* plants both in and out of the fenced area. One fenced population is not enough to be assured of long-term survival of a species. The numbers of plants and populations of this species are sufficiently small that, given its threats, it must still be considered endangered. The correction provided by the latter respondent has been incorporated into this final rule. The Service did not receive any information indicating that the species is more widespread or under lesser threat than previously thought.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Argyroxiphium kauense* should be classified as an endangered species. Procedures and criteria prescribed by Section 4 of the Endangered Species Act (16 U.S.C. 1533) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered species due to one or more of the five factors described in section 4(a)(1) of the Act. These factors and their application to *Argyroxiphium kauense* (Rock & Neal) Degener & I. Degener (Ka'u silversword) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Feral and domesticated animals (goats, pigs, sheep (*Ovis aries*), and cattle (*Bos taurus*)) have altered and degraded the vegetation of much of Hawaii, including the areas where *Argyroxiphium kauense* may have formerly grown, and where it still exists (Mitchell 1981; Scott *et al.* 1986; Tomich 1986; E. Powell, *in litt.*, 1985). The former range of this species may have extended in a band around the southern and southeastern flanks of Mauna Loa at about 1,830 m (6,000 ft) in elevation, as well as its northeastern flank, and possibly also included Hualalai (E. Powell, *in litt.*, 1985, 1990; E. Powell, pers. comm., 1990). The territorial government apparently built "the Kau fence" on Mauna Loa's southeast flank in the 1930s in order to keep feral goats of the lava uplands from invading the lower forests, indicating that these animals probably did impact the range of *A. kauense* (Tomich 1986). Although no specific documentation indicates that feral animals reduced the former range of this species, recent observations show that feral mouflon sheep, pigs, and goats damage and consume *A. kauense*, and mechanically disturb the adjacent ground (Clarke 1982; Stone 1985; E. Powell, *in litt.*, 1985; D. Reeser, *in litt*, 1974; R. Warshauer, *in litt.*, 1979; pers. obs., 1991). Mouflon sheep and pigs have reduced this species' numbers considerably over the past 2 decades (Carr 1990; Clarke 1982; E. Powell, *in litt.*, 1985; E. Powell, Lani Stemmermann, University of Hawaii, and Kaoru Sunada, private florist, pers. comms., 1990).

When rooting, feral pigs knock over and uproot plants. That caused a decrease in the (then unfenced) Powerline Road population from about 1,000 plants of all size classes in 1975, to 20 plants, all immature, in 1984 (E. Powell, *in litt.*, 1985). The fence erected at that site for the Upper Waiakea Bog Plant Sanctuary did not enclose the entire population (Carolyn Corn, Hawaii DOFAW, L. Cuddihy, and L. Stemmermann, pers. comms., 1990). Pigs have severely disturbed the remainder of the bog, destroying all but one unfenced *Argyroxiphium kauense* plant (E. Powell, pers. comms., 1990, 1992). Pig rooting has thus destroyed former habitat and continues to destroy potential habitat of this species (J. Lockwood and E. Powell, pers. comms., 1990). In contrast, within the fenced Sanctuary, the population has increased from 20 to nearly 200 individuals in 8 years (E. Powell, *in litt.*, 1990; E. Powell, pers. comm., 1992). Pigs have also uprooted seedlings of *A. kauense* at the Ke a Pohina population, and have uprooted other native species at all three recently known populations (E.

Powell, *in litt.*, 1985; R. Warshauer, *in litt.*, 1979). Signs of pigs were noted at and near the Ke a Pohina population in 1991 and 1992 (S. Bergfeld, pers. comm., 1992; pers. obs., 1991). Although abundant seedlings of *A. kauense* have been noted at sites where pigs rooting has occurred (C. Wakida, pers. comm., 1990), subsequent rooting up of seedlings outweighs the extent to which pigs temporarily provide sites for seedling establishment (E. Powell, *in litt.*, 1985, 1990).

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Illegal collecting for scientific or horticultural purposes or excessive visits by individuals interested in seeing rare plants could result from increased publicity, and potentially threatens the Powerline Road population of *Argyroxiphium kauense*. The species is of some horticultural and ornamental interest (now growing at Kew Gardens), and in the past, seed was collected for propagation (Degener *et al.* 1976). However, such activity is now minimal.

C. Disease or Predation

Feral mouflon sheep, pigs, and goats are known to feed on *Argyroxiphium kauense* (Clarke 1982; E. Powell, *in litt.*, 1985; D. Reeser, *in litt.*, 1974; Gerald Carr, University of Hawaii, and K. Sunada, pers. comms., 1990). Grazing by mouflon either kills plants or causes them to resprout with multiple stems and greatly reduced vigor (E. Powell, *in litt.*, 1985). The Ke a pohina population of *A. kauense* declined markedly over the past 2 decades, apparently as a result of the activities of a herd of mouflon. The original 8 mouflon released by the landowner in 1968 increased to approximately 2,000 animals by 1992 (Eugene Yap, South Point Safaris, pers. comm., 1992). Although the landowner is now controlling their numbers, mouflon are still present adjacent to the Ke a Pohina population (S. Bergfeld, pers. comm., 1992; pers. obs., 1991).

In 1974, the Ke a Pohina population of *A. kauense* numbered thousands of plants, including 250 mature, flowering individuals with rosettes up to 1 m (3 ft) in diameter (Degener *et al.* 1976; K. Asherman, *in litt.*; 1985; L. Stemmermann, pers. comm., 1990). Two years later, 2,071 plants with a diameter over 8 cm (3 in) were counted at this population (Charles Lamoureux, University of Hawaii, pers. comm., 1990). In 1984, there were about 2,000 plants, but only 1 was in flower and less than 5 percent of the plants were larger than 25 cm (10 in) in diameter (E. Powell, *in litt.*, 1985, 1990). Almost all larger (mature) plants were dead, and grazing damage was evident on plants as small as 5 cm (2 in) in diameter, even within the fence erected by the landowner to protect this species (E. Powell, *in litt.*, 1985, 1990). Mouflon had eaten the growing tips of nearly all large individuals, greatly reducing this population's potential for regeneration (G. Carr and L. Stemmermann, pers. comms., 1990). By 1991, the population had declined to approximately 340 individuals, with 4 plants in flower and less than 1 percent of the plants larger than 25 cm (10 in) in diameter (pers. obs., 1991). Browsing damage by mouflon was again evident on a number of individuals (per. obs., 1991). *Argyroxiphium kauense, Machaerina,* and *Astelia* were the only species showing signs of browse damage (E. Powell, *in litt.*, 1990; pers. obs., 1991).

Only two plants are known to grow outside the fence in the Kea a Pohina area (E. Yap, pers. comm., 1992; pers. obs., 1991). Seed would be expected to blow outside the fence and germinate, as the habitat is similar on either side of the fence (pers. obs., 1991). Predation pressure from mouflon very likely confines this population to the fenced exclosure. The landowner has initiated a policy of removing mouflon from the area of the Ke a Pohina population. Because animal densities are typically very low there, game control personnel monitor the site infrequently (E. Yap, pes. comm., 1992).

Grazing damage by pigs on the leaves and stems of *Argyroxiphium kauense* and grazing damage on leaves that had regrown following grazing are documented for the Powerline Road population (Clarke 1982). Since evidence of pigs has been reported at Ke a Pohina (S. Bergfeld, pers. comm., 1992; pers. obs., 1991), predation by pigs is a potential threat to both populations of *A. kaunese*. The landowner and Hawaii DOFAW completed improvements to the fence at Ke a Pohina in 1992 (S. Bergfeld, pers. comm., 1992). Therefore, feral ungulates may currently be excluded from the fenced portion of both remaining populations of this species. The degree of future threat by feral ungulates to *A. kauense* depends heavily on maintenance of fencing.

The widely scattered, unfenced Ainapo population was most likely destroyed by predation by feral goats (J. Lockwood, pers. comm., 1990). Heavy browsing damage by feral goats to the apex and lateral leaves of *Argyroxiphium kauense* was documented in 1974 at that population (D. Reeser, *in litt.*, 1974). Goats are a potential threat to the two remaining populations of *A. kauense* (L. Cuddihy, E. Powell, C. Wakida, pers. comms., 1990).

Despite claims that alien insects threaten this species, only native pollinators and native non-pollinating insects have been confirmed as damaging seed, and only to a minor extent (Degener *et al.* 1976; Kimura and Nagata 1980; E. Powell, pers. comm., 1990). Most of the seed collections examined by Powell (*in litt.*, 1990) had negligible seed parasitism. *Tephritis* (fly) larvae primarily consume inviable seed, so that even the few collections with appreciable seed parasitism did not impact the seed set negatively (E. Powell, *in litt.*, 1990). No significant threats to *Argyroxiphium kauense* from disease are known.

D. The Inadequacy of Existing Regulatory Mechanisms

One population of *Argyroxiphium kauense* is located on private land. The other population is in a plant sanctuary within a State forest reserve. There are no State laws or existing regulatory mechanisms at the present time to protect or prevent further decline of these plants on private land. However, Federal listing would automatically invoke listing under Hawaii State law, which prohibits taking and encourages conservation by State government agencies. State regulations prohibit the removal, destruction, or damage of plants found on State lands. However, the regulations are difficult to enforce because of limited personnel. Hawaii's Endangered Species Act [HRS, Sect. 195D–4(a)] states, "Any species of aquatic life, wildlife, or land plant that has been determined to be an endangered species pursuant to the [Federal] Endangered Species Act shall be deemed to be an endangered species under the provisions of this chapter * * *" Further, the State may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species [HRS, Sect. 195D–5(c)]. Funds for these activities could be made available under section 6 of the Federal Act (State Cooperative Agreements). Listing of *A. kauense* therefore activates and reinforces the protection available under State law. The Act also offers additional protection because it is a violation of the Act for any person to remove, cut, dig up, damage, or destroy any endangered plant in an area not under Federal jurisdiction in knowing violation of State law or regulation or in the course

of any violation of a State criminal trespass law.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

The small number of populations (two) increases the potential for extinction from stochastic events. A single human-caused or natural environmental disturbance could destroy a significant percentage of the known extant individuals, or the limited gene pool may further depress reproductive vigor.

Two aspects of the reproductive system of *Argyroxiphium kauense* further exacerbate this problem: individual plants flower only once and then die, and flowers must be cross-pollinated from a different plant (Powell 1986; E. Powell, *in litt.*, 1990). If too few plants flower at the same time, or if flowering plants are too widely separated for pollination by insects, no seed will be set. The survival of these relatively small, isolated populations with already depressed reproductive vigor is therefore threatened.

The present demography of the populations, heavily skewed toward immature individuals, is of concern. Only about 3 percent of the plants in the Ke a Pohina population were of probable reproductive maturity in 1991; 66 percent of the population had a rosette diameter under 8 cm (3 in), a size far from reproductive maturity (E. Powell, pers. comm., 1992; pers. obs., 1991). An estimated 12 percent of the Powerline Road population was reproductively mature in 1992 (E. Powell, pers. comm., 1992). Powell's research on the closely related taxon, *Argyroxiphium sandwicense* ssp. *sandwicense* (Mauna Kea silversword), indicates that an estimated minimum of 20 mature plants is necessary for successful reproduction in a population (i.e., 2 individuals flowering simultaneously) (E. Powell, pers. comm., 1992). The Ke a Pohina population currently has approximately 10 individuals of probable reproductive maturity (pers. obs. 1991), putting it at risk of gradual extinction until more individuals reach maturity and reproduce successfully.

The Powerline Road population, with 25 reproductively mature plants (E. Powell, pers. comm., 1992), is only marginally above the estimated minimum level for successful reproduction. Powell's research on *A. sandwicense* ssp. *sandwicense* indicates that the abundance of large pre-flowering plants is far more critical to the survival of the population than the number of young plants (E. Powell, *in litt.*, 1990). In that taxon, a loss of 20 percent of the mature individuals can tip the balance against the survival of a population (E. Powell, pers. comm., 1992). In *A. kauense*, as with most plant species, smaller individuals have a higher natural rate of mortality than larger plants. Since larger individuals are preferentially browsed by feral animals, ensuring the reproductive success of *A. kauense* relates directly to continued protection against feral ungulates.

Ground rooted up by feral animals, as discussed in Factor A, also provides sites for invasion by more aggressive non-native plant species. Alien plants are common at the Powerline Road population and may be spreading in response to pig rooting, as is the case in other Hawaiian bogs (where weeds often spread at the expense of a related species of *Argyroxiphium*) (Clarke 1982; Loope *et al.* 1991; Medeiros *et al.* 1991; L. Cuddihy, pers. comm., 1990). While alien plants pose a potential threat, they are not a serious threat to *A. kauense* at present (Karen Asherman, The Nature Conservancy, *in litt.*, 1985; L. Cuddihy and E. Powell, pers. comms., 1990).

The reproductive potential of *Argyroxiphium kauense* is also limited by the low viability of seed from vegetatively branched individuals. Inflorescences on branched individuals are greatly reduced in comparison with those on unbranched plants. Seed collected from a number of branched plants at the Ke a Pohina population had a viability of 0 to 0.6 percent (G. Carr, pers. comm., 1991; E. Powell, pers. comm., 1992). Branched individuals account for about 50 percent of the larger individuals at the Ke a Pohina population, and all of the individuals flowering there in 1991 (pers. obs.). At the Powerline Road population, about 5 percent of the plants in 1990 were branched (E. Powell, pers. comm., 1992). In older accounts, branched individuals of *A. kauense* were reported to be very rare (Degener *et al.* 1976). Predation is known to cause branching in silverswords. The high proportion of branching in the Ke a Pohina population is very likely due to browsing by mouflon prior to fencing improvements (E. Powell, pers. comm., 1992; pers. obs., 1991). Improving the reproductive potential of *A. kauense* depends on continued protection of the two populations against feral ungulates.

Lava flows and the wildfires they ignite are a serious potential threat to both populations of *Argyroxiphium kauense* (Degener *et al.* 1976; Kimura and Nagata 1980; L. Cuddihy, *in litt.*, 1990; E. Powell, pers. comm., 1990). The larger Ke a Pohina population is located within a half mile of a 1950 flow from the active southwest rift of Mauna Loa. In 1984, a lava flow approached the Powerline Road population, where fire is a potential threat to *A. kauense* in dry years (E. Powell, *in litt.*, 1990; L. Stemmermann, pers. comm., 1990).

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to issue this final rule. Based on the Service's evaluation, the preferred action is to list *Argyroxiphium kauense* as endangered. The small number of populations and limited distribution make this species particularly vulnerable to extinction and/or reduced reproductive vigor from stochastic events. Expansion of the populations is limited by predation and habitat degradation by feral animals. Because browsing differentially affects more mature plants and results in reduced seed viability, reproductive success in this species is dependent on continued protection of the populations against feral ungulates. The low remaining number of individuals, poor species reproductive potential, population structure skewed toward immature individuals, and vulnerability to destruction by lava flows and wildfires indicate that the species is in danger of extinction throughout all or a significant portion of its range; it therefore fits the definition of endangered as defined in the Act. The determination of endangered status for this species thus appears warranted. Critical habitat is not being designated for this species for reasons discussed in the "Critical Habitat" section of this rule.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not presently prudent for this species. Such a determination would result in no known benefit to *Argyroxiphium kauense*.

One of the two extant populations is on State land; State agencies can be alerted to the presence of the plant without the publication of critical habitat descriptions and maps. As discussed under Factor B in the Summary of Factors Affecting the Species, *Argyroxiphium kauense* could be threatened by taking. The publication of precise maps and descriptions of critical habitat in the **Federal Register** and local newspapers as required in a proposal for critical habitat would

increase the degree of threat to this plant from take or vandalism and, therefore, could contribute to its decline and increase enforcement problems. The listing of this species as endangered publicizes the rarity of the plant and, thus, can make it attractive to researchers, curiosity seekers, or collectors of rare plants. All involved parties and landowners have been notified of the importance of protecting the habitat of this species.

Protection of the species' habitat will be addressed through the recovery process. There are no Federal activities within the currently known habitat of this plant. Therefore, the Service finds that designation of critical habitat for *Argyroxiphium kauense* is not prudent at this time, because such designation would increase the degree of threat from vandalism, collecting, or other human activities and because it is unlikely to aid in the conservation of the species.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain activities. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the State and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to insure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. No Federal involvement is known that would affect this species, as all known populations are on State or privately owned land.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62, and 17.63 for endangered plants set forth a series of general prohibitions and exceptions that apply to all endangered plant species. With respect to *Argyroxiphium kauense*, all trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.61, apply. These prohibitions, in part, make it illegal with respect to any endangered plant for any person subject to the jurisdiction of the United States to import or export; transport in interstate or foreign commerce in the course of a commercial activity; sell or offer for sale this species in interstate or foreign commerce; remove and reduce to possession the species from areas under Federal jurisdiction; maliciously damage or destroy the species on any area under Federal jurisdiction; or remove, cut, dig up, damage, or destroy the species on any other area in knowing violation of any State law or regulation or in the course of any violation of a State criminal trespass law. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered plant species under certain circumstances. It is anticipated that few trade permits would ever be sought or issued because *Argyroxiphium kauense* is uncommon in cultivation and is very rare in the wild.

Requests for copies of the regulations concerning listed plants and inquiries regarding prohibitions and permits may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 432, Arlington, Virginia 22203–3507 (703/358–2104; FAX 703/358–2281).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment or Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Carr, G.D. 1985. Monograph of the Hawaiian *Madiinae* (Asteraceae): *Argyroxiphium, Dubautia,* and *Wilkesia*. Allertonia 4:1–123.

Carr, G.D. 1990. *Argyroxiphium*: *in* Wagner, W.L., D.R. Herbst, and S.H. Sohmer, Manual of the flowering plants of Hawai'i. University of Hawaii Press and Bishop Museum Press, Honolulu, pp. 258–262.

Clarke, G. 1982. Memo to State Botanist on Upper Waiakea silversword bog, dated March 19, 1982, State of Hawaii, Dept. of Land and Natural Resources, Div. of Forestry and Wildlife, Hilo. 18 unnum. pp.

Degener, O., and I. Degener. 1957. Flora Hawaiiensis, family 344. *Argyroxiphium*. Publ. priv. 2 pp.

Degener, O., I. Degener, K. Sunada, and Mrs. K. Sunada. 1976. *Argyroxiphium kauense*, the Kau Silversword. Phytologia 33:173–177.

Hawaii Heritage Program. 1991. Element Occurrence Record for *Argyroxiphium kauense*, PDASTOP040.002, dated July 30, 1990, Honolulu. Unpubl. 3 pp.

Kimura, B.Y., and K.M. Nagata. 1980. Hawaii's vanishing flora. Oriental Publ. Co., Honolulu. 88 pp.

Loope, L.L., A.C. Medeiros, and B.H. Gagne. 1991. Studies in montane bogs of Haleakala National Park: Recovery of vegetation of a montane bog following protection from feral pig rooting. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, Techn. Rep. 77:1–23.

Medeiros, A.C., L.L. Loope, and B.H. Gagne. 1991. Studies in montane bogs of Haleakala National Park: Degradation of vegetation in two montane bogs: 1982–1988. Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, Techn. Rep. 78:1–31.

Meyrat, A.K. 1982. A morphometric analysis and taxonomic appraisal of the Hawaiian Silversword *Argyroxiphium sandwicense* DC. (Asteraceae). Coop. Natl. Park Resources Stud. Unit, Univ. Hawaii, Honolulu, Techn. Rep. 46:1–58.

Mitchell, F. 1981. Mouflon sheep and Kau Silversword. Notes Waimea Arbor. & Bot. Gard. 8(1):6–7.

Powell, E. 1986. Breeding biology and conservation of Silverswords (Abst.). Proc. 6th Conf. Nat. Sci., Hawaii Volcanoes Natl. Park, p. 65.

Rock, J.F., and M.C. Neal. 1957. A new variety of Silversword. Occas. Pap. Bernice P. Bishop Mus. 22(4):31–33.

Scott, J.M., S. Mountainspring, F.L. Ramsey, and C.B. Kepler. 1986. Forest bird communities of the Hawaiian Islands: their dynamics, ecology, and conservation. Stud. Avian Biol. 9:1–431.

Stone, C.P. 1985. Alien animals in Hawai'i's native ecosystems: toward controlling the adverse effects of introduced vertebrates: *in* Stone, C.P., and J.M. Scott (eds.), Hawai'i's terrestrial ecosystems: preservation and management. Coop. Natl. Park Resources Stud. Unit. Univ. Hawaii, Honolulu, pp. 251–297.

Tomich, P.Q. 1986. Mammals in Hawaii. 2nd ed. Bishop Museum Special Publ. 76. Bishop Museum Press, Honolulu. 375 pp.

Author

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50167, Honolulu, Hawaii 96850 (808/541–2749).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, and Transportation.

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order, under the family Asteraceae to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
*	*	*	*	*	*	*
Asteraceae—Aster family:						
Argyroxiphium kauense.	Ka'u Silversword	U.S.A. (HI)	E	497	NA	NA
*	*	*	*	*	*	*

Dated: March 24, 1993.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 93–8075 Filed 4–6–93; 8:45 am]

BILLING CODE 4310–55–M

50 CFR Part 17

RIN 1018–AB75

Endangered and Threatened Wildlife and Plants; Amaranthus pumilus (Seabeach Amaranth) Determined To Be Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines *Amaranthus pumilus* (seabeach amaranth) to be a threatened species under the authority of the Endangered Species Act of 1973, as amended (Act). This annual herb is limited to populations in New York, North Carolina, and South Carolina. *Amaranthus pumilus* is threatened throughout its range by beach stabilization structures, beach erosion and tidal inundation, beach grooming, herbivory by insects and feral animals, and, in certain limited circumstances, by off-road-vehicles (ORVs). This action extends Federal protection under the Act to seabeach amaranth.

EFFECTIVE DATE: May 7, 1993.

ADDRESSES: The complete file for this rule is available for public inspection, by appointment, during normal business hours at the Asheville Field Office, U.S. Fish and Wildlife Service, 330 Ridgefield Court, Asheville, North Carolina 28806.

FOR FURTHER INFORMATION CONTACT: Ms. Nora Murdock at the above address (704/665–1195).

SUPPLEMENTARY INFORMATION:

Background

Amaranthus pumilus, described by C. S. Rafinesque (1808) from material collected in New Jersey, is an annual plant in the Amaranth family. Germination takes place over a relatively long period of time, generally from April to July. Upon germinating, this plant initially forms a small unbranched sprig, but soon begins to branch profusely into a clump, often reaching a foot in diameter and consisting of 5 to 20 branches. Occasionally a clump may get as large as a yard or more across, with a hundred or more branches. The stems are fleshy and pink-red or reddish, with small rounded leaves that are 1.3 to 2.5 cm in diameter. The leaves are clustered toward the tip of the stem, are normally a spinach-green color, and have a small notch at the rounded tip. Flowers and fruits are relatively inconspicuous, borne in clusters along the stems. Flowering begins as soon as plants have reached sufficient size, sometimes as early as June, but more typically commencing in July and continuing until the death of the plant in late fall. Seed production begins in July or August and reaches a peak in most years in September but continues until the death of the plant.

Weather events, including rainfall, hurricanes, and temperature extremes, and predation by webworms have strong effects on the length of seabeach amaranth's reproductive season. As a result of one or more of these influences, the flowering and fruiting period can be terminated as early as June or July. Under favorable circumstances, however, the reproductive season may extend until January, or sometimes later (Bucher and Weakley 1990, Weakley and Bucher 1991, Radford et al. 1968).

Amaranthus pumilus is endemic to Atlantic coastal plain beaches, where it is currently known from 13 populations in New York, 34 populations in North Carolina, and 8 populations in South Carolina. The species occurs on barrier island beaches, where its primary habitat consists of overwash flats at accreting ends of islands and lower foredunes and upper strands of noneroding beaches. It occasionally establishes small temporary populations in other habitats, including sound-side beaches, blowouts in foredunes, and sand and shell material placed as beach replenishment or dredge spoil. Seabeach amaranth appears to be intolerant of competition and does not occur on well-vegetated sites. The plant acts as a sand binder, with a single large plant being capable of creating a dune up to 6 decimeters high, containing 2 to 3 cubic meters of sand, although most are smaller (Weakley and Bucher 1991). As stated by Weakley and Bucher (1991):

> Seabeach amaranth appears to need extensive areas of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner. This allows it to move around in the landscape, as a fugitive species, to occupy suitable habitat as it becomes available.

Historically, seabeach amaranth occurred in 31 counties in 9 States from Massachusetts to South Carolina. Seabeach amaranth has now been

eliminated from six of the States in its historic range. Of the 55 remaining populations in New York, North Carolina, and South Carolina, 9 are located on lands administered by the National Park Service, 1 is on land administered by the Department of Defense, 1 is on New York City park land, 9 are on State parks and reserves, 3 are on county parks, 2 and part of another are on municipal land, 1 is on land administered by the U.S. Fish and Wildlife Service, and the remaining 28 and part of another population are on private lands. The 41 populations known to have been extirpated are believed to have succumbed as a result of "hard" beach stabilization structures (seawalls, riprap, etc.), storm-related erosion, heavy recreational beach use by ORVs, and possibly as a result of herbivory by webworms. The continued existence of *Amaranthus pumilus* is threatened by these activities, as well as by beach grooming and some forms of "soft" beach stabilization, such as sand fencing and planting of beach-grasses.

The Service recognized *Amaranthus pumilus* as a category 2 candidate for listing in the Supplement to Review of Plant Taxa for Listing as Endangered or Threatened Species published in the **Federal Register** on November 28, 1983 (48 FR 53640). Category 2 comprises those taxa for which listing is possibly appropriate but for which existing information is insufficient to support a proposed rule. Subsequent revisions of the 1983 notice have maintained *Amaranthus pumilus* in category 2. Recent surveys conducted by Service, State, and Nature Conservancy personnel presented sufficient information for the Service to propose to list *Amaranthus pumilus* as threatened on May 26, 1992 (57 FR 21921).

Summary of Comments and Recommendations

In the May 26, 1992, proposed rule; the October 20, 1992, notice of public hearing and extension of the comment period (57 FR 47833), the November 5, 1992, public hearing; and notifications associated with these activities, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. Newspaper notices inviting public comment were published in the following newspapers: Star News, Wilmington, North Carolina; Post and Courier, Charleston, South Carolina; Newsday, New York, New York; and Coastland Times, Manteo, North Carolina. In response to a formal request, a public hearing on the proposal to list *Amaranthus pumilus* as a threatened species was held on November 5, 1992, at Cape Hatteras School, Buxton, North Carolina. A notice of the hearing and reopening of the comment period to November 16, 1992, was published in the **Federal Register** on October 20, 1992. The public hearing notice announced the purpose, time, and location of the hearing and extended the formal comment period on the proposal in order to ensure that all interested parties had ample time to provide information on the proposed rule.

All written comments and oral statements presented at the public hearing and those received during comment periods are covered in the following discussion. Comments of similar content are grouped together; these and the Service response to each are discussed below.

Seven written responses to the proposed rule were received during the initial comment period. Five of these comments were from State agencies, and two were from private conservation organizations.

The North Carolina Department of Agriculture, the North Carolina Natural Heritage Program, the New York State Department of Environmental Conservation, the North Carolina Division of Parks and Recreation, and the New York Natural Heritage Program all strongly supported the addition of seabeach amaranth to the Federal list of threatened species; they provided updated information on the status of the species in North Carolina and New York. The Service has incorporated the additional information on the status and conservation of the species, as appropriate, into this document.

The Center for Plant Conservation and the Long Island Chapter of The Nature Conservancy also strongly supported the addition of this species to the Federal list of threatened species.

The Dare County, North Carolina, Board of Commissioners requested a public hearing on the Service's proposal and requested additional information on the plant and maps of population locations. In addition, they requested a presentation to the Board of Commissioners by the Service. This additional information was provided, and a presentation was given to the Board on August 17, 1992.

The public hearing on the proposed rule to list seabeach amaranth as a threatened species was held on November 5, 1992, in the auditorium of the Cape Hatteras School, Buxton, North Carolina. Fifteen verbal statements were made at the public hearing, and eight written statements were provided, one of which was a copy of a verbal statement given. Nine written comments were received during the comment period extension.

Statements at the Public Hearing

The Dare County Board of Commissioners expressed opposition to the proposed addition of seabeach amaranth to the Federal list. The commissioners' representative stated that 80 percent of the land in Dare County is in Federal ownership, and the commissioners felt that the county had already "absorbed enough of the regulatory bureaucracy." They also expressed their fear that the beaches of the county would no longer be available for public recreation if this plant were added to the threatened species list. The Service does not believe there is a need to completely exclude public recreation from the beaches in order to conserve seabeach amaranth in Dare County, nor does the Service have the authority to do so. This plant occupies much of the same habitat already used for nesting by the piping plover, which has been listed as threatened since 1985, and the loggerhead sea turtle, which has been listed as threatened since 1978. The Service has worked with the Federal agencies involved in managing these species' habitats, without excluding public recreation from large areas of the beach. Areas of nesting habitat for the two animal species have been roped off to allow these species to complete their reproductive cycle without eggs and young being crushed by ORVs. The Service believes that seabeach amaranth can be conserved by means of the same management. In fact, many of the areas that represent the best habitat for seabeach amaranth are those that are already roped off for nesting shorebirds and loggerhead sea turtles. The Service does not believe there is a need to close off significant additional areas.

Several respondents suggested that local planting projects be attempted in lieu of listing the species. The Service responded that, although the offers of volunteer help were much appreciated and can be incorporated into recovery efforts for the species, much of the habitat within the species' historic range has been rendered permanently unsuitable for it by the construction of seawalls and the placement of riprap on beaches. In addition, simply cultivating the plants or planting seeds, even on apparently suitable habitat, will not alleviate all the threats of seabeach amaranth. In many areas, heavy infestations by caterpillars have caused

massive defoliations and reproductive failure in this species, even in large populations. The species is also eaten by feral livestock in certain areas. A species which has already been eliminated from two-thirds of its historic range, by definition, is in danger. Under the Endangered Species Act of 1973, as amended, Congress required that the Fish and Wildlife Service list such species as endangered or threatened.

One respondent presented a proposal to recover the species by planting it on off-shore spoil islands that are not generally accessible to people and using it to stabilize areas of beach adjacent to N.C. Highway 12 where erosion threatens the main highway on the Outer Banks. One of the Act's primary purposes, as stated in section 2(b), is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved." Cultivation of endangered and threatened species can be a positive conservation tool, and it is often identified as a task necessary for the ultimate recovery of species. The cultivation of threatened species and their reintroduction into areas where they have been extirpated, but where suitable habitat still remains, is a key part of the Service's recovery program for listed species. However, attempting to plant seabeach amaranth in areas that do not represent suitable habitat, such as eroding and otherwise unstable parts of islands, would, in all likelihood, not be successful. These annual plants must be able to survive over an entire season in order to set seed for the following year. The Service believes that cultivation of seabeach amaranth without protecting the natural ecosystems upon which it depends would not meet the requirement of the Act. The range of environmental requirements for successful reestablishment of this species in the wild is not fully understood and will require additional research before anyone can reintroduce the species with confidence that the reintroduction will be successful. Nevertheless, the Service intends to seek out protected areas of suitable habitat where the species has been extirpated and reintroduce it to those areas in hopes of eventual recovery.

One respondent expressed concern that Federal excise tax revenues legislated under the Pittman-Robertson and Dingell-Johnson Acts were not being made available for endangered species conservation. These funds, being a tax on hunters and sport fishermen, are used by the Service and the States for the conservation of wildlife species.

Many of the comments at the public hearing regarded the potential economic impact that the listing of the species would have on local businesses. These concerns were directly related to the fear that this listing would result in the exclusion of vehicles and people from the beaches, thereby curtailing surf fishing and tourism in general. The Act requires the Service to base its listing decisions upon the best biological data available, not economic considerations. However, the Service believes that the conservation of seabeach amaranth in Dare County can be achieved without any noticeable effects on the local economy. There are only two extant populations of the plant in the county, and the area occupied by the plants is only a small percentage of the total beach available to the public for recreation. There are over 80 miles of beach in Dare County; much of this is publicly owned beach that is part of Cape Hatteras National Seashore and Pea Island National Wildlife Refuge. Seabeach amaranth occupies approximately 2.5 percent of this beach area in two discrete locations. Cape Hatteras Point, an extremely popular area used by surf fishermen and other recreational users, has consistently supported one of the largest populations of seabeach amaranth remaining within the range of the species. The Service considers this ample evidence of the compatibility of this species with these types of human use. The drivers of ORVs, which could be a threat to the species at this location, have demonstrated respect for designated vehicle corridors and areas that are roped off for the protection of nesting shorebirds and sea turtles.

One respondent asked if germ plasm from seabeach amaranth had been collected for long-term preservation. The Service responded that some efforts in this regard have been made; however, material has not been collected from all remaining populations. This would be a part of the Service's recovery program for the species.

One respondent stated that, because critical habitat areas were not identified and specific management proposals were not part of the proposed rule, it was unclear what the public was being asked to respond to. The Service did not propose specific management programs for the species in the proposed rule, since this will be a part of the recovery program following the addition of the species to the Federal list of endangered and threatened species. Much remains unknown about the life history requirements and population biology of this species. Further research must be undertaken before sound management proposals can be developed. The Service has determined that designation of critical habitat for this species is not prudent at this time due to its vulnerability to taking and vandalism. In Dare County, the two extant populations are located on Park Service lands. This agency is well aware of their presence and is taking steps to protect them. (See further discussion in the "Critical Habitat" section of this rule.)

One respondent expressed concern about the impact of the listing of seabeach amaranth on the Oregon Inlet jetty project. The Service responded that this species has never been found at Oregon Inlet. The closest known population to that area is approximately 40 miles to the south. Nevertheless, if the plant were to be found at Oregon Inlet at some point in the future, before the jetties were built and after the species was listed, the Service and the U.S. Army Corps of Engineers would go through the section 7 consultation process and attempt to eliminate or minimize impacts to the plant while allowing the project to proceed to the maximum extent possible. The loggerhead sea turtle, a species already on the Federal threatened species list, nests at Oregon Inlet and was the subject of a formal consultation there. At the conclusion of the consultation, it was decided that the project could proceed with certain modifications without jeopardizing the continued existence of this species.

One of the respondents wanted to discuss piping plovers and the draft proposal to designate critical habitat for this species. Since this was not the subject of the hearing, plover issues were not addressed.

One respondent stated that he did not believe that the Service's data had spanned a long enough period of time to support the listing of the species as threatened. The Service responds that observations of this plant have been made since the early 1800s. It is now completely extirpated from six of the nine States within its historic range; many of the remaining populations are currently subject to threats, and South Carolina's populations have been reduced by 90 percent in the last 4 years. From 1988 to 1989, a rangewide reduction in population numbers of 76 percent was noted. Although this plant naturally fluctuates to some extent from one year to the next, such large rangewide reductions in populations are alarming. Over one-fifth of the historic populations in South Carolina have been extirpated. Half of the populations remaining in that State have fewer than

25 plants each, and the total State census in 1990 was only 188 plants. New York has a total State census of only 357 plants and only one population containing over 100 plants. North Carolina, the remaining stronghold for the species, has 18 populations with over 100 plants each. Thirty percent of North Carolina's remaining populations have fewer than 25 plants each. The very small remaining populations are extremely vulnerable to extirpation.

One private landowner from Dare County supported the listing of the species. Another took no position on the listing but recommended that study areas be chosen with care so as not to unduly impact the economy of the area.

Written Statements Received After the Public Hearing

Nine written comments were received during the comment extension period—one from a State agency, one from a Federal agency, and seven from private individuals.

The North Carolina Department of Environment, Health, and Natural Resources, Division of Parks and Recreation, supported the protection of seabeach amaranth under the Act, stating that:

> The proposed rule is well written and very accurately and thoroughly describes the status of and threats to seabeach amaranth. The reduction of a vascular plant species to a third of its former range is highly unusual. Plant species are frequently reduced to small populations distributed in a scattered pattern over their former ranges, but the loss of seabeach amaranth from major portions of its former range (such as the stretch of coast from northern North Carolina north through Virginia, Maryland, Delaware, and New Jersey to southern New York) is dramatic and is cause for grave concern over the species' future. The distribution and status of seabeach amaranth in North Carolina shows that the species survives well on beaches with a wide range of recreational uses, including late fall and winter fishing season use of the beach by vehicles. Seabeach amaranth and the majority of recreational users favor the same conditions—wide, sandy beaches. In fact, protection of seabeach amaranth should help assure the maintenance of wide, sandy, recreational beaches. Some of the larger populations of seabeach amaranth are found on beaches with moderate to heavy recreational use, such as Cape Hatteras Point, Wrightsville Beach, Hammocks Beach State Park, Fort Macon State Park, the north end of West Onslow Beach, and the west end of Holden Beach. The proven compatibility of recreational beach use and seabeach amaranth habitat should allay potential concerns among the public over the proposed listing. A number of other Federal- and State-listed endangered or threatened species characteristically use the same habitat as seabeach amaranth—including sea turtles, piping plovers, least terns, and others. Conservation of a healthy, upper beach ecosystem will favor all these species.

A professional ecologist from the State of New York strongly recommended that seabeach amaranth be listed as threatened, stating, "I think it most probable that the species would become extinct if it were not given such protection * * *."

A response from Camp Lejeune Marine Corps Base in North Carolina stated no position on the listing of the plant but reiterated their commitment to "* * * sound natural resource management in concurrence with the execution of requisite military training in the interest of our nation's defense." Camp Lejeune is habitat for several other federally and State-listed species of plants and animals. Their response further stated, "Military training and the conservation of federally listed species have been effectively coordinated in a manner that ensured protection and allowed military training requirements to be adequately performed." They requested that the seabeach amaranth management guidelines not vary substantially from the management guidelines already in place for the sea turtles which nest in the same areas.

Six private individuals opposed the addition of seabeach amaranth to the Federal threatened species list based upon their fears that the beaches in Dare County, North Carolina, would no longer be available for public recreation as a result. One of these respondents commented further that he did not believe sufficient historical data existed to support listing the species, since "biological stocks in North Carolina are in good shape." The Service reiterates its commitment to work with local people to conserve this species and the belief that conservation of the species and public recreation on the beaches are compatible. Regarding the status of North Carolina populations, the Service is required to consider the status of the species rangewide, not just within particular political boundaries. Although there are several large populations remaining in North Carolina, the species is in much worse condition throughout the rest of its range, where it has been completely eliminated from six of the nine States it occupied historically. The criteria for adding species to the Federal list are contained in section 4 of the Act. These criteria, as they relate to the currently known status of seabeach amaranth, are addressed in the "Summary of Factors Affecting the Species" section of this rule.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that *Amaranthus pumilus* should be classified as threatened. Procedures found at section 4(a)(1) of the Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Amaranthus pumilus* Rafinesque (seabeach amaranth) are as follows:

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

Amaranthus pumilus has been and continues to be threatened by destruction or adverse alteration of its habitat. Since the species was discovered, it has been eliminated from approximately two-thirds of its range, primarily as a result of beach stabilization efforts and storm-related erosion. All of the remaining 55 populations are currently threatened by these factors (Bucher and Weakley 1990, Weakley and Bucher 1991, Clemants and Mangels 1990, Mangels 1991).

In September of 1989, Hurricane Hugo struck the Atlantic coast near Charleston, South Carolina, causing extensive flooding and erosion north to Cape Fear, North Carolina, with less severe effects extending northward throughout the range of seabeach amaranth. This was followed by several severe Northeasters in the winter of 1989–1990 and by Hurricane Bertha in the late summer of 1990. These last storms, although not as significant as Hurricane Hugo, caused substantial erosion of many barrier islands in the heart of seabeach amaranth's remaining range. The 1990 surveys revealed that the effects of these climatic events were substantial. Thirteen populations of the species reappeared on Long Island, New York, many in places that had been surveyed repeatedly in the past (Mangels 1991). As stated by Weakley and Bucher (1991):

> It is not known whether these populations represented long-distance dispersal of seeds (perhaps by ocean currents), short-distance dispersal from previously undiscovered populations on Long Island, or the exposure of local seedbanks.

In the Carolinas, populations were severely reduced. In South Carolina, where the effects of Hurricane Hugo and subsequent dune reconstruction were

extensive, amaranth numbers went from 1,800 in 1988 to 188 in 1990, a reduction of 90 percent. Even with the addition of the New York populations, rangewide totals were reduced 76 percent from 1988. Ironically, although storms and related erosion of beaches threaten seabeach amaranth because of its currently restricted range and reduced populations, attempts to stabilize beaches against these natural geophysical processes is often more destructive to the species and to the beaches themselves in the long run. Weakly and Bucher (1991) state:

> Seabeach amaranth never occurs on shorelines where bulkheads, seawalls, or rip rap zones have been constructed. Not only does construction of these structures occur in the primary habitat of seabeach amaranth, but water and wind erosion lower the profile of the beach seaward of the armoring. The upper beach habitat required by seabeach amaranth (above inundation by tidal action) ceases to exist as the beach is steadily eroded. * * * widespread use of seawalls, jetties, and other hard stabilization structures in New Jersey and other northern states is apparently associated with the extirpation of seabeach amaranth in those states. Of all the states in the former range of seabeach amaranth, North Carolina has made the least use of seawalls. The continued presence of seabeach amaranth in North Carolina and in the part of South Carolina's coast lacking seawalls, is probably not accidental or coincidental.

Even nonstructural beach stabilization techniques, such as sand fences and planting of beach-grass, are generally detrimental to seabeach amaranth. Weakley and Bucher (1991) noted that seabeach amaranth only very rarely occurred when sand fences and vegetative stabilization had taken place and, in these situations, was present only as rare scattered individuals.

In some instances beach erosion and lowering of barrier islands has been accelerated by manmade structures built far from the ocean. Damming of large coastal rivers reduces the sediment load carried by the rivers to the coastal environment. Weakley and Bucher (1991) state:

> There is evidence in several cases that this has reduced the coastal sediment budget, leading to increased erosion rates. Construction of the Santee Dam on the Santee River in South Carolina, impounding Lake Marion, has probably caused the increased erosion of islands in the vicinity of the mouth of the Santee * * * all of the islands in the vicinity of the Santee's mouth are currently marginal habitat for seabeach amaranth, and it has been extirpated from a number of islands by the frequency of overwash.

Beach renourishment can have positive impacts on this species. Although more study is needed before the long-term impacts can be accurately assessed, several populations are shown to have established themselves on renourished beaches and have thrived through subsequent applications of dredged material (Weakley an Bucher 1991; W. Adams, U.S. Army Corps of Engineers, personal communication, 1991).

Intensive recreational use of beaches threatens amaranth populations in some instances. Pedestrian traffic, even during the growing season, generally occurs in areas where it has little effect on populations of seabeach amaranth. However, ORV use of the beach during the growing season can have detrimental effects on the species if traffic is not routed around the plants. The fleshy stems of this plant are brittle and easily broken and do not generally survive even a single pass by a truck tire. Therefore, even minor beach traffic over the plants during the growing season is detrimental, causing mortality and reduced seed production (Weakley and Bucher 1991). ORV traffic is allowed at many of the beaches where this species remains, and those sites where vehicles are allowed to run over amaranth plants generally show severe population declines. In contrast, dormant season ORV use has shown little evidence of significant detrimental effects, unless it results in massive physical erosion or degradation of the site. In some cases, winter ORV traffic may actually provide some benefits for the species by setting back succession of perennial grasses and shrubs with which seabeach amaranth cannot compete successfully. Extremely heavy use of an *Amaranthus* site, even in the winter, may have some negative impacts, however, including pulverization of seeds.

Seabeach amaranth appears to be vulnerable to extirpation in two of the three States in which it remains. South Carolina now has only one population with over a hundred plants and a total State census of 188 plants, and New York has only one population with over a hundred plants and a total State census of 357 plants. The many very small populations remaining are highly vulnerable to extirpation from a variety of natural and manmade factors.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Amaranthus pumilus, although it does not have showy flowers and is not currently a component of the commercial trade in native plants, is an attractive and colorful plant, with a prostrate growth habit that could lend itself to planting on beach-front lots. Its effectiveness as a sand binder could make it even more attractive for this purpose. In addition, other amaranths have been cultivated as food crops in North, Central, and South America for nearly 10,000 years and continue to be grown as important crops in temperate and tropical climates throughout the world. "Its importance is magnified by its nutritional value, high in several amino acids often lacking in diets with little meat" (Weakley and Bucher 1991). Currently, seabeach amaranth is being investigated by the U.S. Department of Agriculture and several universities and private institutes for its potential use in crop development and improvement. Its favorable traits of salt tolerance and large seeds could be of commercial value if combined with other desirable crop traits. However, overcollection of seabeach amaranth plants or seeds from wild populations could threaten its continued existence. Because the species is easily recognizable and accessible, it is vulnerable to taking, vandalism, and the incidental trampling by curiosity seekers that could result from increased publicity about the species and the specific areas where it grows.

C. Disease of Predation

No evidence of disease has been seen in seabeach amaranth. However, predation by webworms is a major source of mortality and lowered fecundity. Moderate to severe herbivory by webworms was seen in most populations in both 1987 and 1988, when many populations, particularly the larger ones, were largely defoliated by early fall. Weakley and Bucher (1991) state, "Defoliation at this season appears to result in premature senescence and mortality, reducing seed production (the most basic and critical parameter in the life cycle of an annual species)." Even though the four webworm species so far identified on seabeach amaranth are all native, their use of barrier island habitats has probably been increased by extensive conversion of coastal plain ecosystems to agricultural use and the resulting introduction of weedy plants, which also serve as hosts for the caterpillars. Therefore, the level of predation experienced by seabeach amaranth is probably unnaturally high. Weakley and Bucher (1991) believe that webworm herbivory is a contributing, rather than a leading, factor in the decline of the species. They state, "The combination of extensive habitat alteration and chronic sever herbivory could be a deadly one for seabeach amaranth." On North Carolina's Outer Banks, feral horses graze on seabeach amaranth. The extent and impact of this

herbivory, however, is minor compared to the effects of webworm predation.

D. The Inadequacy of Existing Regulatory Mechanisms

Amaranthus pumilus is afforded legal protection in North Carolina by the General Statutes of North Carolina, §§ 106–202.15, 106–202.19 (N.C. Gen. Stat. section 106 (Supp. 1991)), which provide for protection from intrastate trade (without a permit) and for monitoring and management of State-listed species, and which prohibit taking of plants without written permission of landowners. *Amaranthus pumilus* is listed in North Carolina as threatened. The species is recognized in South Carolina as threatened and of national concern by the South Carolina Advisory Committee on Rare, Threatened, and Endangered Plants in South Carolina; however, this State offers no official protection. In New York the species is not currently listed, since it was only recently rediscovered there. State legislation offers no protection to the habitat of seabeach amaranth in any of the three States where it remains, and habitat loss/modification and predation appear to be the main threats to the continued existence of the species. Federal/State regulation of development in coastal areas under the Coastal Areas Management Act has undoubtedly helped protect the habitat of seabeach amaranth; however, the scope of these regulations is limited and does not preclude all forms of habitat degradation that adversely affect this species. The Endangered Species Act would provide additional protection and encouragement of active management and recovery actions for *Amaranthus pumilus*.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Little is known about the demographics and reproductive requirements of this species in the wild. As a fugitive species dependent on a dynamic landscape and large-scale geophysical processes, seabeach amaranth is extremely vulnerable to habitat fragmentation and isolation of small populations. As stated by Weakley and Bucher (1991):

> In New Jersey and New York, it has been extirpated or severely diminished by the fortification and modification of a portion only of the coastline. Rendering 50 percent or 75 percent of a coastline "permanently" unsuitable may doom seabeach amaranth, because any given area will become unsuitable at some time because of natural forces. If a seed source is no longer available in the vicinity, amaranth will be unable to reestablish itself when the area is once again suitable. In this way, it can be progressively eliminated even from generally favorable stretches of habitat surrounded by "permanently" unfavorable areas * * * fragmentation of habitat in the north has apparently led to regional extirpation, resulting from the separation of suitable habitat areas from one another by too great a distance to allow recolonization following natural catastrophes. Though apparently suitable habitat is present in a number of northern states formerly part of seabeach amaranth's range, it is no longer found there * * * seabeach amaranth grows above the high tide line, and is intolerant of even occasional flooding during its growing season. It does not, however, grow more than a meter or so above the beach elevation on the foredune or anywhere behind the foredune (except very rarely and extraordinarily). It is, therefore, dependent on a terrestrial, upper beach habitat, unflooded during the growing season from May into the fall. This zone is absent on barrier islands that are experiencing significant rates of beach erosion. If data and hypotheses suggesting future increases in sea level are correct, beach erosion will accelerate and put further pressure on seabeach amaranth.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to propose this rule. Based on this evaluation, the preferred action is to list *Amaranthus pumilus* as threatened. With the species already having been extirpated from two-thirds of its historic range, and based upon the threats to most of the remaining populations, it warrants protection under the Act. Threatened status seems appropriate since there are 55 remaining populations, including some large ones in areas protected from development and beach stabilization.

Critical habitat is not being designated for the reasons discussed below.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary propose critical habitat at the time the species is proposed to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for *Amaranthus pumilus* at this time. As discussed in Factor B in the "Summary of Factors Affecting the Species," *Amaranthus pumilus* is vulnerable to taking, and taking prohibitions are difficult to enforce. Take is regulated by the Act with respect to threatened plants only in cases of removal and reduction to possession from lands under Federal jurisdiction. Most populations of *Amaranthus pumilus* are located on private lands. Although North Carolina general statutes prohibit collection of *Amaranthus pumilus* without permission from the landowner, unlawful taking is difficult to enforce, and publication of critical habitat descriptions would make it more vulnerable to taking and vandalism, increasing enforcement problems for the State of North Carolina. In addition, while listing under the Act increases public awareness of the species' plight, it can also increase the desirability of a species to collectors. As stated previously, *Amaranthus pumilus* is an attractive plant, whose populations are easily accessible. It also could be adversely affected by increased visits to and associated trampling of occupied sites by curiosity seekers as a result of critical habitat designation and accompanying increases in specific publicity.

For the foregoing reasons, it would not be prudent to determine critical habitat for *Amaranthus pumilus*. The Federal and State agencies and landowners involved in protecting and managing the habitat of this species have been informed of the plant's locations and the importance of its protection. Protection of this species' habitat will be addressed through the recovery process and through the section 7 consultation process.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required of Federal agencies and the prohibitions against certain activities involving listed plants are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued

existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service.

Federal activities that could impact *Amaranthus pumilus* and its habitat in the future include, but are not limited to, the following: Construction of beach stabilization structures, such as jetties, groins, bulkheads, and sand fences; beach renourishment and deposition of dredged spoil; and regulation of recreational beach use on Federal lands. The Service will work with the involved agencies to secure protection and proper management of *Amaranthus pumilus* while accommodating agency activities to the extent possible.

The Act and its implementing regulations found at 50 CFR 17.71 and 17.72 set forth a series of general prohibitions and exceptions that apply to all threatened plants. All trade prohibitions of section 9(a)(2) of the Act, implemented by 50 CFR 17.71, apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale this species in interstate or foreign commerce, or to remove and reduce to possession the species from areas under Federal jurisdiction. Seeds from cultivated specimens of threatened plant species are exempt from these prohibitions provided that a statement of "cultivated origin" appears on their containers.

In addition, for endangered plants, the 1988 amendments (Pub. L. 100–478) to the Act prohibit the malicious damage or destruction on Federal lands and the removal, cutting, digging up, or damaging or destroying of endangered plants in knowing violation of any State law or regulation, including State criminal trespass law. Section 4(d) of the Act allows for the provision of such protection to threatened species through regulations. This protection may apply to threatened plants once revised regulations are promulgated. Certain exceptions apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving threatened species under certain circumstances.

It is anticipated that few trade permits would ever be sought or issued because the species is not common in cultivation or in the wild. Requests for copies of the regulations on listed plants and inquiries regarding prohibitions and permits may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, room 432, Arlington, Virginia 22203 (703/358–2104).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

Bucher, M., and A. Weakley. 1990. Status survey of seabeach amaranth (*Amaranthus pumilus* Rafinesque) in North and South Carolina. Report to North Carolina Plant Conservation Program, North Carolina Department of Agriculture, Raleigh, NC, and Endangered Species Field Office, U.S. Fish and Wildlife Service, Asheville, NC. 149 pp.

Clemants, S. and C. Mangels. 1990. *Amaranthus pumilus*—1990 New York State status survey. Report to U.S. Fish and Wildlife Service, Newton Corner, MA. 11 pp.

Mangels, C. 1991. Seabeach amaranth in New York State. New York Flora Association Newsletter 2(2):7–8.

Radford, A., H. Ahles, and C. Bell. 1968. Manual of the vascular flora of the Carolinas. University of North Carolina Press, Chapel Hill, NC.

Rafinesque schmaltz, C.S. 1808. Essential generic and specific characters of some new genusses (sic) and species of plants observed in the United States of America, in 1803 and 1804. The Medical Repository II(5)356–363.

Weakley, A., and M. Bucher. 1991. Status survey of seabeach amaranth (*Amaranthus pumilus* Rafinesque) in North and South Carolina, second edition (after Hurricane Hugo). Report to North Carolina Plant Conservation Program, North Carolina Department of Agriculture, Raleigh, NC, and Endangered Species Field Office, U.S. Fish and Wildlife Service, Asheville, NC. 149 pp.

Author

The primary author of this final rule is Ms. Nora Murdock (see "ADDRESSES" section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, part 17, subchapter B of chapter I, title 50, of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

(1) The authority citation for 50 CFR part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Public Law 99–625, 100 Stat. 3500; unless otherwise noted.

(2) Amend § 17.12(h) by adding the following, in alphabetical order under Amaranthaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
*	*	*	*	*	*	*
Amaranthaceae—Amaranth family:						
*	*	*	*	*	*	*
Amaranthus pumilus ...	Seabeach amaranth	U.S.A. (DE, MA, MD, NC, NJ, NY, RI, SC, and VA).	T	498	NA	NA
*	*	*	*	*	*	*

Dated: March 11, 1993.

Richard N. Smith,

Acting Director, Fish and Wildlife Service.

[FR Doc. 93–8076 Filed 4–6–93; 8:45 am]

BILLING CODE 4310–55–M